

WHAT IS CLAIMED IS:

1. An occlusion detection system for detecting an occlusion in a fluid path of an infusion pump with a reservoir containing fluid for delivering fluid to a user, the occlusion detection system comprising:
  - a housing;
  - a motor contained within the housing;
  - one or more drive train components that react to stimulus from the motor to force a fluid from a reservoir into the user;
  - a sensor positioned to measure a parameter associated with the motor or a drive train component,
    - wherein the sensor produces three or more output levels across a range of measurements; and
    - an electronics system that processes the three or more output levels to declare when an occlusion exists.
2. An occlusion detection system according to claim 1, wherein the sensor measures a force proportional to a force applied to a drive train component.
3. An occlusion detection system according to claim 2, wherein the drive train component is a lead screw.
4. An occlusion detection system according to claim 2, wherein the drive train component is a slide.
5. An occlusion detection system according to claim 1, wherein the sensor measures tension or compression on a beam proportional to a torque applied to the motor.

6. An occlusion detection system according to claim 5, wherein the drive train component is a beam.
7. An occlusion detection system according to claim 5, wherein the drive train component is one or more mounts.
8. An occlusion detection system according to claim 1, wherein the sensor measures tension or compression proportional to a pressure applied to a drive train component.
9. An occlusion detection system according to claim 8, wherein the drive train component is a bellows.
10. An occlusion detection system according to claim 8, wherein the drive train component is a cap.
11. An occlusion detection system according to claim 1, wherein the sensor is a force sensitive resistor.
12. An occlusion detection system according to claim 1, wherein the sensor is a capacitive sensor.
13. An occlusion detection system according to claim 1, wherein the sensor is a strain gauge.
14. An occlusion detection system according to claim 1, wherein the sensor is a piezoelectric sensor.

15. An occlusion detection system according to claim 1, wherein the electronics system uses a maximum measurement threshold method to declare when an occlusion exists.
16. An occlusion detection system according to claim 15, wherein a measurement threshold is at least 2.00 pounds.
17. An occlusion detection system according to claim 1, wherein the electronics system uses a slope threshold method to declare when an occlusion exists.
18. An occlusion detection system according to claim 17, wherein a slope threshold is about 0.05 pounds per measurement.
19. An occlusion detection system according to claim 1, wherein the electronics system uses a maximum measurement threshold method, and a slope threshold method to declare when an occlusion exists.
20. An occlusion detection system according to claim 1, wherein one or more measurements must exceed a minimum level to declare that an occlusion exists.
21. An occlusion detection system according to claim 1, wherein the measured parameter is correlated with a fluid pressure in the reservoir
22. An occlusion detection system according to claim 1, wherein the electronics system processes the sensor output levels to determine when the reservoir is empty.

23. An occlusion detection system according to claim 1, wherein the electronics system processes the sensor output levels to determine when a stopper contacts an end of the reservoir.
24. An occlusion detection system according to claim 1, wherein the electronics system processes the sensor output levels to determine when a slide is seated in a stopper.
25. An occlusion detection system according to claim 1, wherein the sensor is positioned between the motor and a housing component.
26. An occlusion detection system according to claim 25, wherein VHB adhesive is positioned between the motor and the housing component.
27. An occlusion detection system according to claim 25, wherein one or more components including the sensor are stacked between the motor and the housing component, and wherein the housing component is positioned to remove space between the one or more components before the housing component is attached to the housing.
28. An occlusion detection system according to claim 1, wherein one or more components including the sensor are stacked between the motor and the housing, and wherein back-fill material is injected through the housing to remove space between the one or more components and to fill the space between the one or more components and the housing.

29. A method of detecting an occlusion in an infusion pump for infusing fluid into the body of a user, the method comprising the steps of:

- obtaining a measurement from a sensor before each fluid delivery;
- calculating a slope of a line generated using two or more measurements;
- comparing the slope to a slope threshold;
- incrementing a counter when the slope exceeds the slope threshold;
- declaring an occlusion when the counter exceeds a detection count.

30. A method of detecting an occlusion in an infusion pump for infusing fluid into the body of a user, the method comprising the steps of:

- obtaining a measurement from a sensor before each fluid delivery;
- calculating a current slope of a line using two or more measurements;
- calculating an average slope using a previous average slope and the current slope;
- comparing the average slope to a slope threshold;
- incrementing a counter when the average slope exceeds the slope threshold;
- declaring an occlusion when the counter exceeds a detection count.

31. An occlusion detection system according to claim 30, wherein the two or more measurements are not consecutive.

32. An occlusion detection system for detecting an occlusion in a fluid path of an infusion pump with a reservoir for containing fluid for delivering fluid to a user, the occlusion detection system comprising:

- a housing;
- forcing means for forcing fluid from a reservoir containing a fluid;
- sensing means for sensing a parameter associated with the forcing means for forcing fluid from the reservoir to obtain one or more measurements;
- wherein the sensing means produces one of three or more output levels for each of the one or more the measurements; and
- evaluation means for evaluating the one of three or more output levels associated with each of the one or more measurements to declare when an occlusion exists.

33. An occlusion detection system according to claim 1, wherein the sensor is a multi-switch sensor.